

**BUREAU OF HIGHWAYS
REQUEST FOR PROPOSAL
For
QUALIFICATIONS BASED SELECTION FOR PREQUALIFIED SERVICES**

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is currently prequalified for this type of work and you are interested in providing services, please indicate your interest by submitting a Proposal. The Proposal must be submitted in accordance with the latest "Vendor Selection Guidelines for Service Contracts", available on the MDOT website.

For efficiency sake, we are asking that the vendor firm provide **3** paper copies of the Proposal to the MDOT Survey Project Manager named in the attached scope of services.

These copies must be received by **3:00 pm on Friday, November 4, 2005**. Fax and electronic copies are not acceptable. Send them to:

Thomas W. Benson, Survey Consultant Project Manager
Michigan Department of Transportation
Van Wagoner Building
425 W. Ottawa Street, B220
P.O. Box 30050
Lansing, MI 48909

In addition, provide one unbound copy to:

Regular Mail:
Secretary, **Operations Contract Support**
Michigan Department of Transportation
P.O. Box 30050
Lansing, MI 48909

OR

Overnight Mail:
Secretary, **Operations Contract Support**
Michigan Department of Transportation
425 W. Ottawa
Lansing, MI 48933

This copy is to be received within three working days after the due date and time specified above.

Please do not deliver in person.

Any questions relative to the scope of services must be submitted by e-mail to the MDOT Survey Project Manager. Any questions must be asked at least three working days prior to the due date and time specified above. All questions and their answers will be placed on the MDOT website as soon as possible after receipt of the questions. The names of vendors submitting questions will not be disclosed.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

The selection team will review the information submitted and will select the firm considered most qualified to perform the engineering services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

The scope of services is attached to this solicitation.

As part of this solicitation the DBE goal is waived.

This project will be classified to be between \$25,000 and \$100,000 according to Exhibit F.

For the purposes of this RFP, the following categories of Exhibit F will required as part of the scoring process (Exhibit C) to select a vendor as contained in the "Vendor Selection Guidelines document. This change will increase the total number of pages up to a maximum of 8 per Exhibit F plus Resume and Capacity pages.

- 1.) Understanding of Services and Technical Proposal – 3 pages
Be specific on timeframes, methods, sequences and personnel whose resumes are included. A Gantt chart is suggested.
- 2.a.) Organization Chart – 0.5 pages
Keep in mind that no engineering is required for this project.
- 2.b.) Structure of Team – 0.5 pages
List what offices team members are from.
- 3.) Resumes – 1 to 2 pages per employee per Project Team member - show project related experience only.
 - a.) Qualifications of Team Leader – The team leader is defined as the person in charge of the project. For survey projects this person is a Professional Surveyor as defined by Act 299 and will be the primary MDOT contact. Only list projects that relate to this

- prequalification category.
- b.) Qualifications of Remaining Key Staff and Sub-consultant Staff – 1 to 2 pages – list up to 5 related projects only. Resumes are required for all personnel depicted on the Organizational Chart (ie: QA/QC, CADD, Crew Chiefs, Survey Techs, Office, etc.). Construction staking is not a similar project.
 - c.) A note of caution, we realize we are asking for team member information for a project that will start up to several months in the future. All firms are asked to submit this information for which this scoring will be based. For a fair process, key personnel will not be allowed to be changed without submitting a resume for those personnel to insure a comparable background. **Payment invoices will be compared to the approved organizational chart, if differences are noted the payment process may be slowed, stopped, or the amount reduced.**
- 4.) References / Past Performance – 1 page
Projects listed should relate to the pre-qualification category being advertised in this RFP. References will be checked. Construction staking does not qualify.
 - 5.) Capacity – 1 page per employee per Project Team member
Include all team members and all projects, whether for MDOT or the Private sector and the anticipated completion date.
 - 6.) Quality Assurance / Quality Control Plan – 1 page
Plan should be survey not engineering based.
 - 7.) Location – 0.5 pages
If multiple offices are involved this will be scored based on the location of the Team Leader.
 - 8.) Safety – 1 page – Be project specific.

Any items that are omitted or conflict in documentation will result in the immediate disqualification of the proposal and it will be returned with a letter stating why.

Please note that three (3) proposals are required to be submitted to the Survey Project Manager.

SCOPE OF SURVEY WORK

This project will be performed in International Feet.

Complete Structure (S08) Replacement Survey and Road Approach Survey

DATE: October 20, 2005

PROJECT ROUTE : I-75 under the South Huron River Drive Overpass

CONTROL SECTION: 58152 JOB NUMBER: 59585 D

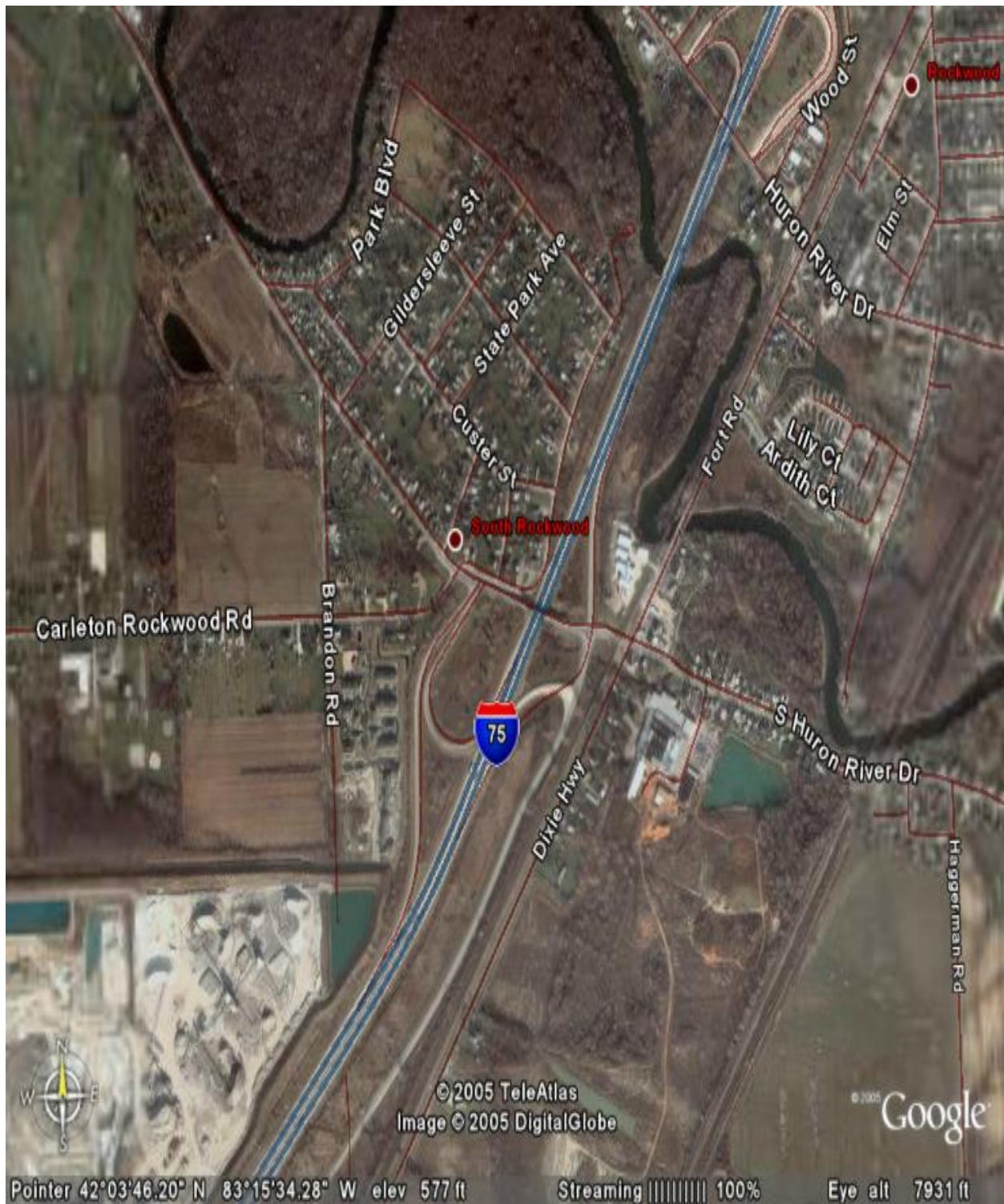
Pre-qual Categories : Bridge Survey; PPMS Task : 3340;
Road Design Survey, PPMS Task: 3330

Note: A total of 4 portfolios are required for this project, 2 for the Bridge Survey and 2 for the Road Survey.

Read all parts of this Scope as there are numerous unique requirements contained.

Submit a Proposal based upon the requirements of the Request for Proposal and this Scope

MAPPING LIMITS: South Huron River Drive from 1000 feet east of Dixie Highway to 1000 feet west of Carleton / South Rockwood Road, from Right-of-Way to Right-of-Way. Also, the last 500 feet of the Ramp Terminals intersecting South Huron River Drive, except the Southbound I-75 exit ramp in which the entire ramp is required, from Right-of-Way to Right-of-Way. Sylvania Drive from South Huron River Drive to 500 feet south of the intersection of the Northbound I-75 exit ramp with Sylvania Drive, from Right-of-Way to Right-of-Way. I-75 from 150 feet south of the start of the taper for the Northbound exit of I-75 onto Sylvania Road to 150 feet north of the north face of the overpass, from Right-of-Way to Right-of-Way. Topo points within the 150 foot limit of the structure on I-75 shall be taken at a 10 foot interval from shoulder to shoulder. See the picture below for orientation.



**Exit 26 on I-75
South Huron River Drive**

MDOT TEAM

Any survey related questions over this project may be directed to the Survey Project Manager, Thomas W. Benson, at phone (517) 373-0020.

Any bridge design related questions over this project may be directed to the Project Manager/ Bridge Design Engineer, Raja Jildeh, at phone (517) 373-0736.

Any road design related questions over this project may be directed to either Lynne Herf at (810) 225-2627 or Kelby Wallace at (810) 225-2629.

GENERAL REQUIREMENTS:

1. Survey must be completed by a survey firm pre-qualified to perform Bridge and Road Design Surveys for MDOT.
2. Surveys must meet all requirements of the Michigan Department of Transportation (MDOT) Standards of Practice dated April 1, 1998. Please contact our office to clarify any specific questions regarding these standards.
3. Consultants must obtain all necessary permits, including an up-to-date permit from the MDOT Utilities Coordination and Permits Section, required to perform this survey on any public and/or private property.
4. The consultant must adhere to all applicable OSHA and MIOSHA safety standards, including the appropriate traffic signs for the activities and conditions for this job.
5. Consultants are responsible for a comprehensive and conscientious research of all records essential for the completion of this project.
6. Surveys must comply with all Michigan law relative to land surveying.
7. Surveys must be done under the direct supervision of a Professional Surveyor licensed to practice in the State of Michigan.
8. Measurements, stationing, recorded data, and computations must be in International Feet.
9. Coordinate values shall be based upon the Michigan State Plane coordinate system (NAD 83). Elevations must be based upon North American Vertical Datum of 1988 (NAVD 88) or alternate acceptable to the Survey Project Manager.

previous sections. The surveyors' project report should specify any items included in this section.

13. A portfolio may contain several types of data but, no section is to contain more than a single type. Some sections may not contain data, depending on specified project deliverables. All sheets in a portfolio must be marked with the control section, job number, section number and page number. CD-ROM must be labeled with the control section, job number, data type and file names.
14. The following information is to be submitted on CD-ROM:
 - a. Text files, in ASCII format per Attachment ASC, containing the witness lists for the horizontal control points, alignment points, bench marks, and government corners.
 - b. Any other text files are to be in ASCII Format or Microsoft Word.
 - c. All pages in the portfolio must be submitted in PDF and be placed in the appropriate folder on the CD.
15. Documents are to be submitted as follows:
 - a. All recorded instruments on 8.5" x 11" sheets.
 - b. All text files printed on 8.5" x 11" sheets.
 - c. All recorded plats and condominiums on 18" x 24" sheets.
 - d. All plots on 24" x 36" sheets.
 - e. All documents and plots are to be legibly printed or reproduced on white paper.
16. The Consultant representative shall record and submit type-written minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees.
17. The MDOT Project Manager will be the official contact for the Consultant. The Consultant must either address, or send a copy of all correspondence to the MDOT Project Manager. The MDOT Project Manager shall be made aware of all communications regarding this project.
18. All data, whether electronic or paper must be recorded on non-rewritable Compact

Discs (CDs). All paper pages / files, including Microstation files, contained in the portfolio are required to be scanned and / or converted to Adobe Acrobat PDF (portable document format) format and placed in the appropriate subdirectory on the CD. The Table of Contents (PDF format) will have all PDF pages for the project book marked / linked so that each section or page on the CD can be accessed with a single computer mouse click. All original specified electronic files, such as Ascii text, Caice, Microstation DGN, etc. must be accessible in their original format. All photos must be in JPEG format.

19. CDs must be labeled with the route, location, control section, job number, Consultant name, and data type.
20. Be sure to check our web page for the latest updated material / files.

At the completion of this survey and prior to beginning the design of this project, all field survey notes (legible copies of pages will suffice), all electronic data, and all research records obtained for this project will be considered the property of MDOT and must be sent to the Survey Project Manager at the following address:

Thomas W. Benson, Survey Consultant Project Manager
Michigan Department of Transportation
Van Wagoner Building
425 W. Ottawa Street, B220
P.O. Box 30050
Lansing, MI 48909

Please use MDOT Form 222(5/01) entitled SURVEY NOTES: RECEIPT AND TRANSMITTAL for all transmittals.

A copy of this transmittal form must also be sent to the Road Project Manager and Bridge Design Engineer noted above.

It is recommended that the projects survey control be submitted for review as soon as it is available.

WORK RESTRICTIONS

The selected consultant survey firm must have the Professional Surveyor in charge of the project contact the Traffic and Safety Engineer at the Davison TSC, who has jurisdiction over the project location, to determine what work restrictions will be imposed and which maintaining traffic scenarios will be acceptable.

PROJECT SCHEDULE

The anticipated start date is December 5, 2005 with the scheduled survey completion date for the

Structure and Road Survey is February 17, 2006.

MILESTONE PAYMENT SCHEDULE

Compensation for this Scope of Design Services shall be on a Cost Plus basis. Such Cost Plus compensation shall be paid on a monthly basis for the following portions of the services and in the following amounts with the total not to exceed the total negotiated price for the contract:

1. Bridge Design Survey, PPMS Task 3340	30 %
2. Road Design Survey, PPMS Task 3330	70 %
Total Reimbursement for services	100 %

FIELD SURVEY

The purpose of the field survey is to obtain all information and data required by the project design engineer, to leave control in the field for future construction staking, and to provide a sufficient history of the area to enable the MDOT Design Survey Unit to perform, in the future, dependable surveys. The surveyor must discuss the scope of this survey with the project design engineer before initiating any work on this project. Notes of this meeting must be typewritten and submitted to the Project Manager and Consultant Coordinator within two weeks of this meeting.

The field survey must include, but is not limited to, the following:

CONTROL

HORIZONTAL and VERTICAL CONTROL

A three dimensional coordinate system must be established for this project. The horizontal component of this coordinate system must be based on the Michigan State Plane Coordinate System (NAD 83). The vertical component of this system must be based upon the North America Vertical Datum of 1988 (NAVD 88) or alternate acceptable to the Survey Project Manager. Upon request, the MDOT Design Survey Unit will supply descriptions of nearby published NGS control bench marks. A complete history, as well as a recovery description with new witnesses to be submitted in DDPROC to NGS, for each NGS horizontal control station or bench mark used for this project must be included in the final report submitted to the MDOT Design Survey Unit. The DDPROC program is available through the MDOT Design Survey office.

The horizontal project control for this project will be classified as intermediate project control according to the MDOT Standards of Practice dated April 1, 1998. These points are intended for mapping and should be located outside the proposed construction area to insure their availability for all phases of construction. Each control point must be accurately described and witnessed to at least four nearby features. Please refer to MDOTs Standards of Practice for the

minimum requirements for these points.

A closed traverse must be run and adjusted between two or more known points on the project control traverse. Open traverses are **NOT** acceptable. Unadjusted traverse measurements must produce an error of closure of not greater than 1:20,000. Any permissible error of closure shall be distributed throughout the traverse by means of a suitable least squares adjustment software program. These points must not be set greater than 1970 feet or less than 490 feet apart, semi-permanent in nature, and located outside the proposed construction area to insure their availability for all phases of construction. All data collection traverse points and the alignments must be tied to the control established for this project.

All field observations, unadjusted traverse computations and final adjusted coordinates must be included in the notes. A list of all horizontal control points must be developed which includes datum, all point designations, descriptions, coordinates, station and offset, and witnesses. This list must be printed on 8.5" x 11" sheets and placed on CD-ROM, in ASCII format per Attachment ASC. All data relating to the horizontal component of the system must be included in the portfolio.

GPS rapid static techniques will be allowed to establish the Intermediate Control Points for this project. A minimum of 20 minute sessions and double occupancy is required per each setup on each point, the data must be post processed, and all data must be submitted at least in electronic format and be contained in the Control folder on the CD-rom.

RTK GPS techniques will be allowed to do the topographic mapping for this project where permissible otherwise conventional methods will be used. At a minimum when using RTK methods all check shots must compare within 0.05 feet in X, Y, and Z to the established Intermediate Control Point coordinates. **If this tolerance is not met then all the data from the previous Control Point must be re-observed.** The original data set must be retained and submitted and also noted in the Surveyors Report.

Elevations must be based upon North American Vertical Datum of 1988 (NAVD 88) or alternate acceptable to the Survey Project Manager.

Bridge Seat Elevations must be determined and compared to the elevations from the existing plans.

New bench marks must be set on structures outside the proposed construction area. Each bench mark must be accurately described. **A minimum of four (4) bench marks is required**, one on each side of the structure on the I-75 corridor and one at or near each end of the project limits for South Huron Drive, away from the construction limits.

Bench marks for this project will be considered Intermediate Vertical Control according to the Standards of Practice. Leveling must be performed to meet Third Order accuracy standards (0.06 ft times the square root of the distance in miles). Any error of closure must be distributed throughout the level runs by means of a suitable least squares adjustment software program.

Open level loops are **NOT** acceptable.

The bench mark notes must include all field observations, the unadjusted loop closures and the final adjusted elevations. A bench mark list must be developed that includes datum, bench mark designations, descriptions, and elevations. This bench mark list must be printed on 8.5" x 11" sheets and placed on CD-ROM, in ASCII format per Attachment ASC. The printed list and the CD-ROM are to be submitted with the consultants' final report.

The methods used to establish the horizontal and vertical components of the project coordinate control system must be fully discussed in the Surveyor's Project Report.

ALIGNMENT

Required alignments for this project are as follows: Bridge alignment, I-75, South Huron Drive, and Sylvania Road.

The bridge alignment will be based on the Reference Points as established from field measurements and compared to the existing bridge plans, the I-75 alignment will be based on ROW sheets and best fit field data, the alignment for South Huron River Drive and for Sylvania Road will be based on best fit field data.

The reference points at each end of the bridge as well as the pier reference point(s) must be computed and the coordinates, stationing, and elevation noted for each point and shown in an alignment sketch. This sketch can also be used to portray the crossing angles of the bridge substructure. Measurements and calculations made to establish this baseline(s) must be included in the notes and fully explained in the final report.

PROPERTY

The **property section** for this project will consist of Government corners that may be necessary for alignment establishment, or that fall in the construction area. A list of the adjacent land owners is required for the entire length of the project to include addresses, tax descriptions, and the Plat Map(s) of the area.

As ROW will be an issue along South Huron River Drive a through search for property corners will be necessary.

GOVERNMENT CORNERS

Any PLSS corners within the project limits must be recovered or established and tied to the project coordinate system.

All PLSS corners must be recorded in accordance with PA 74 of 1970, as amended and all applicable administrative rules. A copy of each recorded land corner recordation certificate must be submitted to the MDOT Design Survey Office as part of the final report. All PLSS corners located in hard surface roads must be protected by a monument box, regardless of impending construction.

MAPPING

MAPPING LIMITS: South Huron River Drive from 1000 feet east of Dixie Highway to 1000 feet west of Carleton / South Rockwood Road, from Right-of-Way to Right-of-Way. Also, the last 500 feet of the Ramp Terminals intersecting South Huron River Drive, except the Southbound I-75 exit ramp in which the entire ramp is required, from Right-of-Way to Right-of-Way. Sylvania Drive from South Huron River Drive to 500 feet south of the intersection of the Northbound I-75 exit ramp with Sylvania Drive, from Right-of-Way to Right-of-Way. I-75 from 150 feet south of the start of the taper for the Northbound exit ramp of I-75 onto Sylvania Road to 150 feet north of the north face of the overpass, from Right-of-Way to Right-of-Way. Topo points taken within 150 foot of the north and south face of the structure on I-75 shall be taken at a 10 foot interval from shoulder to shoulder with all other points taken at a 50 foot interval. The following procedure will be used in the collection of the field data: Cross sections will be taken at no more than 50 feet apart and in the following manner- Hard surface observations (LL, EC, EB) will be collected. Back of curb (BC) and gutter pan (GUT) will be collected in areas where curb exists. Edge of concrete observations are to be staggered at half the distance between the edge of bit shoulder observations to create a stronger Triangulated Irregular Network (TIN). For instance, at Station 1080+00 in a 2-lane section, observations will be made at the left and right EB. At Station 1080+50, observations will be made at the right EG, CL and left EG. At Station 1081+00, observations will again be at the left and right EB. As I-75 is a divided highway staggering the points to cover the median and ditches to the ROW will be accomplished in the same fashion as noted above. Planimetric and contour maps must be provided for the area within the mapping limits – one for the bridge portfolio and one for the road portfolio. The scale for the bridge portion of this project will be 1" = 40' and the contour interval will be 1 foot. The scale for the road portion of this project will 1" = 100' and the contour interval will be 1 foot.

All curb, gutter, cross-culverts, head walls, public or private approaches, and other features which may affect the design of the project within the mapping limits must be accurately described and located. New curb and gutter sections shall be noted as such.

All trees and landscaping within the ROW must be located and identified. Brush areas may be outlined and classified.

All drainage structures in the mapping area will be located and identified. A connectivity plot is required as well as a spreadsheet detailing the type of structure, rim elevation, invert(s), direction(s) of pipe(s) and point number(s), and structure condition.

ELEVATIONS

Cross sections must be taken along the abutment reference lines from shoulder to shoulder, and delivered in sketch format showing location and distance between shots, description and elevation and the Angle of Crossing of Existing Substructure Units.

A plan sketch showing the field measured under clearances at the shoulder points, edge of bit / concrete, edge of metal, centerlines, etc. for both sides of the bridge and in the middle of the structure and or low point of the structure.

The consultant shall provide bridge seat elevations at abutment fascias, clearly labeled.

UTILITIES

The consultant is required to note any and all visible utilities attached to the bridge and within the limits of the survey as defined by this scope. If none, so note. It is not necessary to contact the individual utility companies to obtain as built plans. A list of said companies with an address, contact person, and phone number is required.

BRIDGE SPECIFIC INFORMATION

Plan and Elevation views of the structure showing the dimensions of the Substructure, Face to face substructure measurements and Superstructure Elements is required. As many hand sketches and marked up Bridge Plan sheets should be generated to convey all required information. These sketches shall include the Bridge Seat elevations, the Northing / Easting / Elevation / Stationing for the Reference Points, the Under clearances to I-75, and the Angle of Crossing.

Laser Scanning is permissible provided all procedural steps from start (establishment of control) to finish (QA/QC & error checking) are explained in the technical proposal.

MISCELLANEOUS

Any information that would not be appropriately placed in the control, property or mapping sections must be included in this section. General photographs and local newspaper articles are examples of miscellaneous data.

The surveyor must describe, in the final report, the data included in this section.

FINAL REPORT: DELIVERABLES

The final report for this project shall include the following:

1. In the first pocket of the first portfolio, the projects Professional Surveyor's Report on company letterhead consisting of the following:
 - a. A comprehensive synopsis written in non-technical language, and signed by the projects Professional Surveyor, of the work performed on this project.
 - b. The source and the methods used to establish the horizontal coordinates, elevations, and the alignment for this project.
 - c. A detailed explanation of anything discovered during the survey of this project that may create a problem for the designer or another surveyor.
2. Witness lists for any government corners, alignment / reference points, control points, and bench marks developed per Attachment Asc.
3. Reference line cross-sections.
4. Bridge seat elevations.
5. Utility information.
6. All original field survey notes, all electronic survey data files, all calculation sketches, and all research records obtained for this project. All survey notes are to be placed near the beginning of the Mapping section. All electronic survey data shall be submitted on CD-ROM only, specifically labeled. No paper copy of raw survey data is required.
7. The list of adjacent owner addresses, and tax descriptions for the four quadrants of the project.
8. Legible copies of all recorded Land Corner Recordation Certificates filed or found for the Government corners specified in this scope of survey.
9. It is the responsibility of the consultant to insure that all electronic files submitted to MDOT conform to the required format, and all documents are legible.
10. The consultant must organize and label the various sections of the portfolios as required by the Standards of Practice for MDOT Design Surveys dated April 1, 1998.
11. All documents, pages, files for this project must be placed into a PDF format.
12. Any and all other information as requested within this Scope.

ATTACHMENT ASC

Mandatory ASCII format for control point, alignment point, government corner witness lists, and benchmark list.

1. File must be generated exclusively in ASCII Text format, in a program such as Notepad. Conversions from Rich Text Format, WordPerfect, etc. are not acceptable unless the file can be imported directly into Microstation in proper format.
2. **Do not use Tabs** to align text. Use spaces only.
3. Use normal keyboard keys for fractions. (Ex: ½")
4. For special characters use only the following MDOT Design font zero keyboard keys.
5. Data must be organized as shown in the example below:

FONT O KEY BOARD CHANGES

< = ± (PLUS OR MINUS)
 \ = Q (CENTERLINE)
 } = Δ (DELTA)
 ! = ø (DIAMETER)
 ^ = ° (DEGREE)

CONTROL PT#: CP660

DESCRIPTION: Set 5/8" x 3" rod and yellow S&W cap in west edge of M-95 gravel shoulder, and < 150' north of \ of Norway Dr.

Station 47+38.27, Offset 24.00' Lt

COORDINATES: N = 409,047.6476 E = 13,232,571.566 Elev = 892.864

Combined Scale Factor: 0.99996741

WITNESSES:

1. EAST 16.45' \ of N-S concrete M-95.
2. SOUTH 6.05' North edge of concrete base of "Sagola City Limits" sign.
3. S84^W 16.66' Set nail and S&W tag in north face of power pole.
4. S43^E 73.82' Set nail and S&W tag in S.W. face of 6" ! maple.
6. Data must be capable of being imported directly into Microstation, while retaining basic structure and showing proper symbols such as degree and centerline.
7. Prior to importing text files into Microstation, the font must be set to 0, Height must be set to 12, Width must be set to 10, and Line Spacing must be set 8 in the Microstation-Element-Text Dialog Box. Also, in the same Dialog Box, single line and multi-line justification must be set to Left.
8. A Microstation file must be saved and submitted with the appropriate control point, benchmark and witness data. This file must be named Job#wit.dgn.

Attachment E

MDOT QA/QC Certification Check List

(May 2004)

The purpose of this checklist is to insure that critical items are checked prior to submitting the project for review and acceptance. The proper use of this document should drastically reduce the amount of time spent by MDOT and Consultant personnel correcting oversights and omissions from the project. The last page of this

list is to be used to provide a brief explanation of why an item is being omitted. If a particular item is not applicable simply check NA, no explanation is necessary. **Failure to complete and include this list with the final project portfolio will result in the immediate return of the portfolio for completion.**

**NOTE : Be sure that the latest CAiCE files and Tugboat from the MDOT FTP site are utilized.
Be sure that the latest PDF requirement is accomplished.**

√ NA

Portfolio:

____ Two complete sets of survey data have been compiled for delivery.
____ Portfolio labeled as per Scope.

Portfolio Pocket Contents:

Administrative:

____ **The MDOT Survey Contact is** _____.

____ MDOT Transmittal Form 222

____ Table of Contents matching the portfolio contents

____ MDOT QA/QC Certification Check List

____ All portfolio pages scanned into PDF format

____ Comprehensive project survey report in Microsoft Word. Also, include a synopsis of
the report that pertains to that section in the front of each pocket in the portfolio.

____ MDOT Authorization Letter

____ Copy of Project Scope of Work

____ Copy of Proposed Work Plan and Schedule

____ Copy of all Work Permits required for the project

____ All correspondence including all E-mails
(change of scope, change of schedule, phone records etc.)

____ **All Project and PDF files must be archived in subdirectories matching each
portfolio pocket on the Compact Disc (CD) including: CAiCE archive (.zip),
Microstation drawing file (.DGN) which must also be in their original format.**

____ All required ASCII files and Microsoft Word documents.

√ NA

____ All Project files and CAICE archive recorded on a Compact Disc (CD) named the
same as the job number (#####c) and all files under the appropriate directory
headings:

ADMINISTRATION__, CONTROL__, ALIGNMENT__, PROPERTY__,

MAPPING __, MISCELLANEOUS __.

Control:

____ Control Point List in Microsoft Word and ASCII text formats with:
Datum __, Description __, Coordinates with Std. Err. __, Station-offsets __,
Scale Factors __, Witnesses __, Geoid used __, Grid __ or Ground __
Plane.

____ Statement with formula to convert from Grid to Ground on Control Point list.

____ Bench Mark List in Microsoft Word and ASCII text formats with:
Datum __, Descriptions __, Elevations __, Station-offsets __.

____ Control Point least squares adjustment statistical report (ASCII) showing
Reference Factors and weighting strategies

____ Benchmark level loop - least squares adjustment report (ASCII)
All level loops should be in one adjustment run if at all possible.

____ G.P.S./traverse adjusted coordinates with standard errors

____ **Level adjustment report, showing to the hundredth of a foot,**
____ **0.06ft error per /Mi**
____ **0.04ft error per /Mi**

____ Sketch or plot of network or traverse

____ NGS or MDOT data sheets of existing control

____ DDPROC - .ha files printout, or copy of Mark Recovery Form submitted
on the NGS website for stations recovered and used for Horizontal and / or
Vertical Control

Alignment:

____ A sketch or CADD drawing of the alignment with:
stationing __, horizontal coordinates __, curve data __, alignment points
found or set __, source of stationing __.

____ Control sketch with control points, government corners and alignment plotted.

____ A report discussing in detail the type of alignment, source of the stationing and how it
was determined.

____ Alignment point list in Microsoft Word and ASCII text formats with:
Datum __, Description __, Station __, Coords. with Scale Factors __,
Witnesses __.

√ NA

_____ **Describe Alignment Chain(s) (ASCII) from CAiCE**

Coordinates __, Bearings __, Distances __, Curve data __, Stationing __.

_____ **Property:**

_____ Recorded copies of all LCRCs required for the project.

_____ Government Corner list in Microsoft Word and ASCII text formats with:

_____ Datum __, Corner names __, Coordinates, Scale Factors, and 4 witnesses __,
_____ Indication of which corners are in danger of destruction __.

_____ Section Corner ties to the alignment with station, distance and bearing along the
_____ section line.

_____ Section map with bearings, distances between Government corners.

_____ Copy of submittals to county Remonumentation (if required)

_____ Copies of all research documents, tax maps, tax descriptions, deeds,
_____ recorded plats, surveys, etc.

_____ A separate plot of alignment or tax map showing all property irons found, with point
_____ numbers.

_____ Property Corner report (ASCII) with

_____ Coordinates with Scale Factors __, Station-offset __, Description __, Feature
_____ code __, Alignment name __.

_____ A station-offset listing of property irons.

_____ **Mapping:**

_____ * **A legible planimetric plot (2d Microstation Drawing) generated from the MDOT
(CAiCE) Plans Production Tugboat, including:**
_____ contours __, MDOT Cells symbology __, Centerline alignment shown __.

_____ A second plot showing all surface materials, utility connectivity and other pertinent
_____ notes or comments.

_____ All plots certified as per scope.

_____ All field survey notes obtained for this project.

_____ Drainage structure inventory is:

_____ correlated to the structures shown on the plot __, includes all pertinent data
_____ about the structures: Station and offset __, coordinates __, structure name __,
_____ rim elevations __, invert depths with corresponding computed invert
_____ elevation __, pipe sizes __, directions __, structure cover type __, culvert size,
_____ material, condition __, headwall or end section description __.

√ NA

- ____ INDIVIDUAL UTILITY REPORTS (ASCII) for each utility with:
Designation____, Coordinates____, Elevation____, Description____, Feature Code____,
Station-Offset____.
- ____ Utility Owner listing (ASCII) with:
Name of Utility____, Address____, Phone number____, Contact Person____.
- ____ Drainage structure report (ASCII or a spreadsheet compatible with MDOT
software) of manholes and catch basins with:
Designation____, Coordinates____, Elevation____, Description____, Feature Code____,
Station- offset____, Invert and Pipe Dimension information____, Structure
condition____.
- ____ Culvert Structure report (spreadsheet compatible with MDOT software) with:
Designation____, Coordinates____, Elevation____, Station-offset____, Size and
Material____.
- ____ Drainage Report (dissertation of conversations with local people and own visual
inspection of the project area.
- ____ A list of all utilities noting utility name, address, phone number and contact person.
- ____ Station Offset report for each utility feature.
- ____ As-Built plans from each utility.

Miscellaneous:

- ____ Miscellaneous Information Included
- ____ Digital or Scanned Photographs

Bridge Specific Information:

- ____ Sketch of structure* in elevation view including:
Ref. Line to Ref. Line Dimensions____, Ref. Pt. Elevs.____, Ref Pt. Stations____,
Underclearance Elev.____, Abutment, bridge seat and Pier cap Elev.____, Ftg. Elev. (if
requested)____, face to face abutment and pier dimensions____, **top of
Water elev.____, stream bed elevs.____, lower roadway elevs.____.**
- ____ Sketch of structure* in Plan View including:
Ref. Pt. Elevs.____, Ref Pt. Stations____, Ref Pt. Coordinates____, Alignment____, Angle
of Crossing____, Deck dimensions____, Abutment and Pier cap dimensions____.
- ____ Explanation of how reference point locations were determined.

* If plans are available this information may be shown on existing plan sheets.

√ NA

CAiCE File

_____	_____	Project Name is MDOT Job Number (#####c)
_____	_____	CAiCE Project Description field is filled out
_____	_____	Correct Units (International Feet) selected in System Settings
_____	_____	Correct Datum Selected in System Settings
_____	_____	Z Coordinate value set to 4.2 in System Settings
_____	_____	Correct MDOT Feature Table Attached prior to Data importation
_____	_____	Correct MDOT Cell Library Attached prior to Data importation
_____	_____	Only MDOT Feature Codes Used
_____	_____	All points have appropriate Descriptions
_____	_____	Desired plot scale checked with designer
_____	_____	All survey chains edited and properly connected prior to DTM creation.
_____	_____	All survey chain crossings resolved.
_____	_____	All survey chain curves checked for correctness and aesthetics.
_____	_____	No survey chain curves are shown as chords.
_____	_____	Survey chain Patterns checked for proper direction (guardrail, railroad, tree line, etc)
_____	_____	Hydro survey chains checked for correct left to right direction.
_____	_____	Single DTM Surface is named EX (multiple surfaces = EX1, EX2, etc.)
_____	_____	DTM checked for invalid break lines
_____	_____	DTM checked for invalid point data (spikes/holes)
_____	_____	DTM triangles checked for spikes and dips
_____	_____	Long or invalid triangles have been obscured from TIN
_____	_____	Bridge decks and data suspended above natural terrain/substructures have been removed from the terrain surface prior to triangulation.
_____	_____	Terrain surface beneath bridge decks is included in DTM
_____	_____	Underwater areas have been removed from terrain surface prior to triangulation
_____	_____	* Text size is dependent on the scale
_____	_____	___ 100 scale, text size = 9.0
_____	_____	___ 50 scale, text size = 4.5
_____	_____	___ 40 scale, text size = 3.6
_____	_____	* Cell Scale set to: ___ 1.0 (1":100'), ___ 0.5 (1": 50'), ___ 0.4 (1": 40')
_____	_____	* Contour Interval set to 2 in DTM Settings
_____	_____	* Max. Offset for contour smoothing set to 1 in DTM Settings.

Contour Object Display Settings:

_____	_____	* Contour interval set to 2 regular and 10 index .
_____	_____	* All contour colors set to 5, Index set to 2
_____	_____	* Line weights set to 0 regular, 1 Index
_____	_____	* All contour levels set to 20
_____	_____	* Index Label spacing set to 60, color set to 5
_____	_____	* Character height is dependent on the scale;
_____	_____	___ 100 scale, character height = 9.0
_____	_____	___ 50 scale, character height = 4.5
_____	_____	___ 40 scale, character height = 3.6
_____	_____	* Label Depression Contours unchecked

_____* Final contours computed after DTM edits and settings checked

√ NA

Display:

_____* Scale and text size checked prior to display
_____* Survey Chains displayed as per Attachment >AA=
_____* Survey Points displayed as per Attachment >AA=
_____* Alignment geometry chain Feature Code is SCL
_____* Alignment geometry chain is displayed
_____* Contours are displayed
_____* Point descriptions displayed as per Attachment >AA= and scope
_____* All overlapping text has been clearly resolved (if requested in scope)
_____* All subsurface drainage can be correlated with inventory sheets.
_____* CAiCE drawing file created and named Job # +pl.cdg (#####cpl.cdg)
_____* **Correct seed file selected for Microstation file conversion**

DATUM	SEED FILE
____ Assumed	____ MiDOT2d.dgn
____ SPC83 South	____ Seedfs.dgn
____ SPC83 Central	____ Seedfc.dgn
____ SPC83 North	____ Seedfn.dgn

_____* **Correct cell file selected for Microstation file conversion (midote_02.cel)**
_____* Microstation file of Bridge structures created with Contours (Plan of Site)
_____* **Geopak files generated from the MDOT Plans Production tugboat/macro.**
_____* **____ 3d Microstation DGN triangle file, ____ Survey Chain (TIN**
_____* **Boundary) around edited triangle file with the name and feature “CLIP”,**
_____* **____ Job #.OBS and Job #.XYZ files (can only be generated from tugboat)**
_____* **CAiCE archive file named Job# (#####c.zip)**
_____* Project portfolio labeled and includes data as per scope.
_____* **Used MDOT’s Plans Production tugboat/macro.**

_____* Many of the asterisk items can be easily completed in CAiCE using the CAiCE
Tugboat/Macro AMDOT Plans Production@. Contact your project Consultant
Coordinator for information about this CAiCE tugboat.

√ NA

_____* **All paper pages in the portfolio must be scanned into a PDF format file even if already existing in electronic form. An example will be supplied if requested.**

_____* **Create one .DGN file with the Control point list, Benchmark list, Alignment point list, and Government Corner list per Attachment ASC named the Job # (xxxxxxxWIT.DGN).**

Scope has been reviewed to insure compliance.

I have reviewed the survey notes and scope of work and certify that all required and requested information is present in the portfolio in compliance with the MDOT Survey Standards of Practice, the survey scope of work and this QA/QC Check List. Any information omitted from this submission has been explained on the sheet attached.

SEAL

Professional Surveyor #

Explanation of Omissions

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.